



INTERNATIONAL TELECOMMUNICATION UNION

ITU-T

TELECOMMUNICATION
STANDARDIZATION SECTOR
OF ITU

G.722.2

Annex A

(01/2002)

SERIES G: TRANSMISSION SYSTEMS AND MEDIA,
DIGITAL SYSTEMS AND NETWORKS

Digital terminal equipments – Coding of analogue signals
by methods other than PCM

Wideband coding of speech at around 16 kbit/s
using Adaptive Multi-Rate Wideband (AMR-WB)

Annex A: Comfort noise aspects

ITU-T Recommendation G.722.2 – Annex A

ITU-T G-SERIES RECOMMENDATIONS
TRANSMISSION SYSTEMS AND MEDIA, DIGITAL SYSTEMS AND NETWORKS

INTERNATIONAL TELEPHONE CONNECTIONS AND CIRCUITS	G.100–G.199
GENERAL CHARACTERISTICS COMMON TO ALL ANALOGUE CARRIER-TRANSMISSION SYSTEMS	G.200–G.299
INDIVIDUAL CHARACTERISTICS OF INTERNATIONAL CARRIER TELEPHONE SYSTEMS ON METALLIC LINES	G.300–G.399
GENERAL CHARACTERISTICS OF INTERNATIONAL CARRIER TELEPHONE SYSTEMS ON RADIO-RELAY OR SATELLITE LINKS AND INTERCONNECTION WITH METALLIC LINES	G.400–G.449
COORDINATION OF RADIOTELEPHONY AND LINE TELEPHONY	G.450–G.499
TESTING EQUIPMENTS	G.500–G.599
TRANSMISSION MEDIA CHARACTERISTICS	G.600–G.699
DIGITAL TERMINAL EQUIPMENTS	G.700–G.799
General	G.700–G.709
Coding of analogue signals by pulse code modulation	G.710–G.719
Coding of analogue signals by methods other than PCM	G.720–G.729
Principal characteristics of primary multiplex equipment	G.730–G.739
Principal characteristics of second order multiplex equipment	G.740–G.749
Principal characteristics of higher order multiplex equipment	G.750–G.759
Principal characteristics of transcoder and digital multiplication equipment	G.760–G.769
Operations, administration and maintenance features of transmission equipment	G.770–G.779
Principal characteristics of multiplexing equipment for the synchronous digital hierarchy	G.780–G.789
Other terminal equipment	G.790–G.799
DIGITAL NETWORKS	G.800–G.899
DIGITAL SECTIONS AND DIGITAL LINE SYSTEM	G.900–G.999
QUALITY OF SERVICE AND PERFORMANCE	G.1000–G.1999
TRANSMISSION MEDIA CHARACTERISTICS	G.6000–G.6999
General	G.6000–G.6099
Symmetric cable pairs	G.6100–G.6199
Land coaxial cable pairs	G.6200–G.6299
Submarine cables	G.6300–G.6499
Optical fibre cables	G.6500–G.6599
Characteristics of optical components and subsystems	G.6600–G.6999
DIGITAL TERMINAL EQUIPMENTS	G.7000–G.7999
General	G.7000–G.7099
Coding of analogue signals by pulse code modulation	G.7100–G.7199
Coding of analogue signals by methods other than PCM	G.7200–G.7299
Principal characteristics of primary multiplex equipment	G.7300–G.7399
Principal characteristics of second order multiplex equipment	G.7400–G.7499
Principal characteristics of higher order multiplex equipment	G.7500–G.7599
Principal characteristics of transcoder and digital multiplication equipment	G.7600–G.7699
Operations, administration and maintenance features of transmission equipment	G.7700–G.7799
Principal characteristics of multiplexing equipment for the synchronous digital hierarchy	G.7800–G.7899
Other terminal equipment	G.7900–G.7999
DIGITAL NETWORKS	G.8000–G.8999
General aspects	G.8000–G.8099
Design objectives for digital networks	G.8100–G.8199
Quality and availability targets	G.8200–G.8299
Network capabilities and functions	G.8300–G.8399
SDH network characteristics	G.8400–G.8499
Management of transport network	G.8500–G.8599
SDH radio and satellite systems integration	G.8600–G.8699
Optical transport networks	G.8700–G.8799

For further details, please refer to the list of ITU-T Recommendations.

ITU-T Recommendation G.722.2

Wideband coding of speech at around 16 kbit/s using Adaptive Multi-Rate Wideband (AMR-WB)

Annex A

Comfort noise aspects

Summary

This annex details the operation of the background acoustic noise evaluation, noise parameter encoding/decoding and comfort noise generation for the AMR Wideband (AMR-WB) speech codec during Source Controlled Rate (SCR) operation.

The comfort noise operations described here were also adopted by 3GPP in 3GPP specification TS 26.192.

Source

Annex A to ITU-T Recommendation G.722.2 was prepared by ITU-T Study Group 16 (2001-2004) and approved under the WTSA Resolution 1 procedure on 13 January 2002.

FOREWORD

The International Telecommunication Union (ITU) is the United Nations specialized agency in the field of telecommunications. The ITU Telecommunication Standardization Sector (ITU-T) is a permanent organ of ITU. ITU-T is responsible for studying technical, operating and tariff questions and issuing Recommendations on them with a view to standardizing telecommunications on a worldwide basis.

The World Telecommunication Standardization Assembly (WTSA), which meets every four years, establishes the topics for study by the ITU-T study groups which, in turn, produce Recommendations on these topics.

The approval of ITU-T Recommendations is covered by the procedure laid down in WTSA Resolution 1.

In some areas of information technology which fall within ITU-T's purview, the necessary standards are prepared on a collaborative basis with ISO and IEC.

NOTE

In this Recommendation, the expression "Administration" is used for conciseness to indicate both a telecommunication administration and a recognized operating agency.

INTELLECTUAL PROPERTY RIGHTS

ITU draws attention to the possibility that the practice or implementation of this Recommendation may involve the use of a claimed Intellectual Property Right. ITU takes no position concerning the evidence, validity or applicability of claimed Intellectual Property Rights, whether asserted by ITU members or others outside of the Recommendation development process.

As of the date of approval of this Recommendation, ITU had received notice of intellectual property, protected by patents, which may be required to implement this Recommendation. However, implementors are cautioned that this may not represent the latest information and are therefore strongly urged to consult the TSB patent database.

© ITU 2002

All rights reserved. No part of this publication may be reproduced, by any means whatsoever, without the prior written permission of ITU.

CONTENTS

	Page
A.1 Scope	1
A.2 Definitions, symbols and abbreviations	1
A.2.1 Definitions	1
A.2.2 Symbols	1
A.2.3 Abbreviations	2
A.3 General	2
A.4 Functions on the transmit (TX) side	2
A.4.1 ISF evaluation	3
A.4.2 Frame energy calculation	4
A.4.3 Analysis of the variation and stationarity of the background noise	5
A.4.4 Modification of the speech encoding algorithm during SID frame generation	5
A.4.5 SID-frame encoding	6
A.5 Functions on the receive (RX) side	6
A.5.1 Averaging and decoding of the LP and energy parameters	6
A.5.2 Comfort noise generation and updating	7
A.6 Computational details and bit allocation	7